Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in this Application:

1-12. (Cancelled).

13. (New) A method for encapsulating pollutants comprising:

(a) modifying dendrimeric polymers having symmetric chemical structure and/or non-symmetric hyperbranched polymers to contain:

-at least one atom of a chemical element able to form three or more chemical bonds;

-at least one inorganic or organic linking group; and

-at least one aliphatic chain with more than 8 carbon atoms or at least one aromatic group or the combination of the aliphatic chain and the aromatic group, wherein the aliphatic chain or the aromatic group or the combination of the aliphatic chain and the aromatic group is introduced on the surface of the dendrimeric polymers or of the hyperbranched polymers;

wherein the modifying renders the polymers lipophilic, and wherein the modified polymers form nanocavities from the internal chains of the dendrimeric polymers and from the external aliphatic chains or aromatic groups or combination of aliphatic chains and aromatic groups; and

(b) introducing the modified dendrimeric polymers and/or modified non-symmetric hyperbranched polymers into a solution containing pollutants, wherein the pollutants are encapsulated in the nanocavities.

14. (New) The method according to claim 13 wherein the atom of a chemical element able to form three or four chemical bonds is nitrogen.

15. (New) The method according to claim 13 wherein the inorganic or organic linking group is aromatic or aliphatic or their combination.

16. (New) The method according to claim 13 wherein the modified dendrimeric polymers are diaminobutane poly(propylene imino) dendrimers modified with lipophilic segments.

17. (New) The method according to claim 13 wherein the modified non-symmetric hyperbranched polymers are derivatives that result from the polycondensation of succinic, pthalic or tetrahydropthalic anhydride with diisopropanolamine.

18. (New) The method according to claim 13 wherein the modified polymers are added in powder form to the solution containing pollutants and wherein subsequently the solution is stirred and the modified polymers which have the encapsulated pollutants are removed by filtration or centrifugation or the combination of filtrration and centrifugation.

19. (New) The method according to claim 13 wherein a thin film is prepared from the modified polymers and the method further comprises covering a container with the thin film and adding the solution to the interior of the container for purification.

20. (New) The method according to claim 13 wherein the product resulting from the modification of the polymers is employed for application to systems used for the purification of water.

21. (New) The method according to claim 13 further comprising regenerating the lipophilic dendrimeric or hyperbranched polymer by protonation with a strong acid or by treatment with hot solvent under conditions that do not dissolve the dendrimeric polymer but do dissolve the absorbed lipophilic organic pollutants.

22. (New) Method for the preparation of modified symmetric dendrimeric polymers and modified non-symmetric hyperbranched polymers which have nanocavities as a result of being modified to contain: at least one atom of a chemical element able to form three or more chemical bonds; at least one inorganic or organic linking group; and at least one aliphatic chain with more than 8 carbon atoms or at least one aromatic group or the combination of the aliphatic chain and the aromatic group, wherein the aliphatic chain or the aromatic group or the combination of the aliphatic chain and the aromatic group is introduced on the surface of the dendrimeric polymers or of the hyperbranched polymers; the method comprising: contacting a dendrimeric or hyperbranched polymer with reactants which are diepoxides, di-isocyanate derivatives or diacylhalides to produce

polymers that are bound through aliphatic or rigid aromatic spacers, wherein the modified polymers are rendered lipophilic and form polymeric networks.